

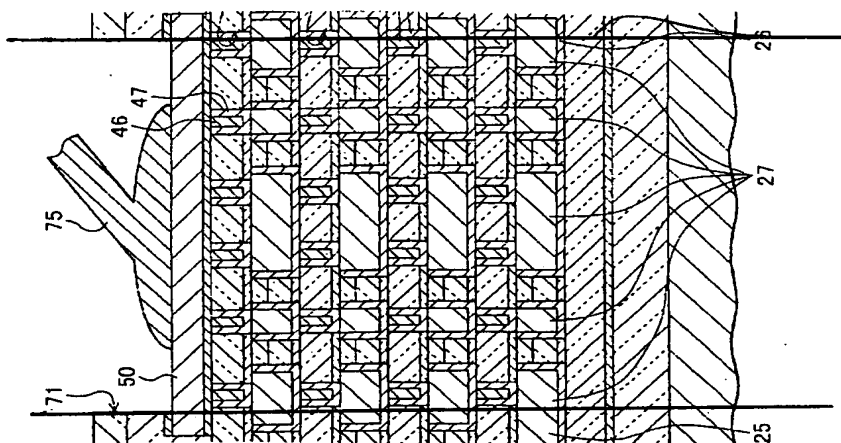
REMARKS

The Official Action objects to the drawings and rejects claims 50-51 under §112, second paragraph. Claims 50 and 51 have been amended to provide that the upper copper layer is separated from the lowest surface of the bonding pad only by the barrier metal. This is shown in Figure 2A where the lowest level of the pad 130 is separated from the upper copper layer 120 only by the barrier layer 54. Reconsideration and withdrawal of the objection to the drawings and the rejection under §112, second paragraph, are respectfully requested.

Claims 1, 3-11, and 14 were rejected as anticipated by WATANABE 2003/0047794. Reconsideration and withdrawal of the rejection are respectfully requested.

The Official Action appears to have missed the limitation that the lower copper layer is not electrically connected to the upper copper layer under the bonding pad. WATANABE discloses four wiring layers 20 that each include copper wiring pattern 25 and copper pads 27. The conductive wire 75 is connected to the MOSFET 6 through the wiring layers 20, which are electrically connected to each other under the bonding pad with via holes 35, 45 filled with conductive plugs 36, 46 (0046-0051). WATANABE does not disclose the limitation that the lower copper layer is not electrically connected to the copper layer under the bonding pad (it discloses the opposite), and thus claims 1, 3-11, and 14 avoid the rejection under §102.

Further, WATANABE does not disclose the limitation in claim 1 wherein a copper area ratio of the lower copper layer under the bonding pad is lower than that of the upper copper layer, and thus claims 1, 3-11, and 14 avoid the rejection under §102 for this additional reason. By contrast, WATANABE shows that the four wiring layers 20 have the same copper area ratio under the bonding pad. For example, Figure 1 of WATANABE (reproduced in part below) shows that, under the bonding pad (between the solid vertical lines), the copper area ratios of the layers are the same.



Claims 1, 3-11, and 14 were rejected as anticipated by HATANO et al. 2002/0163083. Reconsideration and withdrawal of the rejection are respectfully requested.

HATANO et al. disclose that a contact reaches the copper interconnect 104 through copper pad 108, so that interconnect 104 and pad 108 are electrically connected to each other (Figure 1A, 0037). HATANO et al. do not disclose that the lower copper layer is not electrically connected to the upper

copper layer under the bonding pad as required in claim 1 (the reference discloses the opposite) and thus claims 1, 3-11, 14 avoid the rejection under §102.

Claims 42-49 were rejected as unpatentable over WATANABE. Reconsideration and withdrawal of the rejection are respectfully requested.

Claim 42 includes an internal circuit region inside of the bonding region, where the internal circuit region has a multilevel wiring structure that includes copper interconnect layers at a first level and copper interconnect layers at second level, and an upper copper layer in the bonding region above the internal circuit region and under the bonding pad in electrical contact therewith, where the upper copper layer is electrically isolated from the internal circuit region.

WATANABE does not disclose that the upper copper layer is electrically isolated from the internal circuit region. Indeed, the reference discloses the opposite. WATANABE discloses four wiring layers 20 that each include copper wiring pattern 25 and copper pads 27. The conductive wire 75 is connected to the MOSFET 6 through the wiring layers 20, which are electrically connected to each other under the bonding pad with via holes 35, 45 filled with conductive plugs 36, 46 (0046- 0051). No copper layer is electrically isolated as claimed. Since the reference does not disclose the claimed electrical isolation, the electrical isolation of the upper copper layer from the internal

circuit region would not be obvious to one of skill in the art. Accordingly, claims 42-49 avoid the rejection under §103.

Claims 42-51 were rejected as unpatentable over HATANO et al. Reconsideration and withdrawal of the rejection are respectfully requested.

As explained above, HATANO et al. disclose that a contact reaches the copper interconnect 104 through copper pad 108, so that interconnect 104 and pad 108 are electrically connected to each other (Figure 1A, 0037). HATANO et al. do not disclose that the upper copper layer is electrically isolated from the internal circuit region as required in claim 42 (the reference discloses the opposite) and thus claims 42-51 avoid the rejection under §103.

In view of the present amendment and the foregoing remarks, it is believed that the present application has been placed in condition for allowance. Reconsideration and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

YOUNG & THOMPSON

Thomas W. Perkins by
[Signature] #17,355

Thomas W. Perkins, Reg. No. 33,027
745 South 23rd Street
Arlington, VA 22202
Telephone (703) 521-2297
Telefax (703) 685-0573
(703) 979-4709

TWP/lrs